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ANALYSIS OF RUSSIAN "WALK IN SPACE" FILM

1. This report is based on the observations and conclusions of the NPIC analysts in their analysis of the Russian "Walk in Space" film. The copy received at this site for analysis is not the same one presented on American television. Our copy was received 

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2. Part 1 of this report is a report issued to 
 of DDS&T according to the terms of a requirement levied on TID. The photo numbers in the border of the report were added to key the photographs to the pertinent comments in the text.

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3. Part 3 is a presentation of the Polaroid prints generated during the analysis. A print was made of each frame on either side of each splice. Prints of additional frames were made to study particular characteristics of other frames. While the reader of this report may not find significance in all of the prints, they were originally generated on an exploratory basis. In addition to the Polaroid prints, there is a color transparency which was produced as part of the analysis.

4. Part 2 is an index to the photography. It lists the reason for each photo, the outstanding feature of the photo, the camera used to generate it, and the location of the frame within the roll. The location of the photos within the roll is indicated


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as an index number. That number is keyed to a series of numbers printed at one foot intervals in the border of the film from which the analysis was made. The references in the photo index are in sixteenths because there are sixteen frames per foot.

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17 January 1966

SUBJECT: ANALYSIS OF RUSSIAN "WALK IN SPACE" Film Copy *E*

MEMORANDUM FOR: Deputy Director, Science and Technology

ATTENTION:

SUBJECT: Analysis of Russian "Walk in Space" Film

1. In accordance with your request, the Technical Intelligence Division has analyzed the film of the Russian "Walk in Space." The main purpose of the analysis was to determine the validity of the photographed activities. The analysis was conducted with particular attention to the article dealing with the subject in the January 1966 issue of Science and Mechanics.

2. The method of analysis was:

a. The film was viewed, in motion, to determine its general content and continuity.

b. The film was then analyzed on a frame-by-frame basis.

c. The third step was the gathering of collateral to support or deny assumptions made from the analysis.

d. Finally, 58-XX polaroid prints were made to further study isolated portions of the film.

3. From the foregoing analysis, the following conclusions were made:

a. Six cameras were used to generate the original film.

b. Of the six cameras employed, two were loaded with a conventional type of color film and the other four were probably electronic recording devices.

c. For the purpose of identification, a numerical designation was assigned to each camera and the following list was compiled:

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GROUP 1
Excluded from automatic
downgrading and
declassification

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Camera	Type	Footage
1. Inside the vehicle	Color	202'
2. Outside the vehicle	Electronic	200 12/16'
3. Outside the vehicle	Electronic	42 5/16'
4. Outside the capsule	Electronic	10 14/16'
5. Outside the capsule	Color	410 14/16'
6. Outside the vehicle	Electronic	39 12/16'
TOTAL		906 9/16'

The following data makes reference to the above camera numbers:

d. Camera Number 1 appears to have been hand-held. It was used to photograph the earth and cloud formations, through a porthole in the vehicle.

e. Camera Number 2 generated photos of the cosmonaut in a sitting position inside the vehicle. It appears that two lenses were used. Some photos are extreme close-ups (face only) while others are moderate close-ups (including entire body).

f. Camera Number 3 was apparently mounted outside the vehicle hatch and was focused on the hatch. It pretends to show the cosmonaut coming out of the vehicle, prior to his walk in space and re-entering the vehicle after his walk in space. We have determined that a portion of this footage is a hoax. It appears they photographed him entering the capsule, then printed the footage - reversed it, and spliced it in the proper sequence to simulate his egress from the capsule. Prints from the footage of him coming out, exactly match prints of him re-entering the capsule. Reflections, shadows, and physical positions could not possibly have been duplicated so perfectly on the two procedures. Stereo studies of the duplicated imagery further substantiate this conclusion.

Photo
Refer-
ences1-4, 13, 14
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g. Camera Number 4 was used to photograph the cosmonaut from inside the vehicle as he left the capsule through the open hatch. The film is very dense and very little detail is visible.

h. Camera Number 5 was used to photograph the cosmonaut outside the capsule, floating in space. The camera was loaded with color film and apparently was mounted on a stationary mount outside the vehicle.

i. Camera Number 6 shows the cosmonaut inside the vehicle. The shots were all made at approximately the same distance from within the capsule and show a side view of the cosmonaut recording entries in a log. Portions of the footage are severely underexposed and were apparently made as the vehicle passed in the shadow of the earth.

4. Based on the conclusions drawn from the foregoing analysis these further observations were made:

a. While the original film contained both black and white and color film, the entire record was duplicated on positive color film stock. To augment this conclusion, prints of a black and white positive, produced from an aerial negative, were made on positive color duplicating stock. The resulting positive is monochromatic-green. The portions of the space walk that we contend were originally black and white are monochromatic-blue. The outstanding fact here is that the ultimate rendition is monochromatic in both instances. The tone or color in which the color is rendered is strictly dependent on the light source used for printing, the characteristics of the color emulsion of the duplicating stock, and the time and temperature of processing. Hence, there is no doubt concerning this conclusion.

b. From the grain pattern of the film originally generated in black and white, it is concluded that the film was generated by an electronic transmission medium. The photographs made with Camera Number 2 clearly display television scan lines. These photos were probably made directly from a television receiver. Cameras Number 3, 4 and 6 show a definite dot or grain pattern characteristic of electronic realtime, storage type viewers,

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i.e., the signals are transmitted, received and stored until a composite picture is available, then the image is displayed on a cathode ray tube. This technique is similar to that used in the United States Apollo Program photos. This is also the type of presentation used in the AN/AAS-18 infrared realtime viewer. To further prove the conclusions concerning the film of Cameras 3, 4 and 6, photos of an intercepted Russian transmission were analyzed. The transmission was of terrain imagery acquired from a space vehicle and subsequently projected to earth via electronic transmission. The grain is nearly identical to that which is apparent on the film of the three cameras in question. There is little or no doubt about the validity of the conclusion.

c. The photos made with Cameras 2 and 6 clearly show the cosmonaut's face behind his face mask; however, on the photographs of the cosmonaut in space taken with Camera 5, only his mouth and chin are visible through the face shield. From this, and from observations made on the close-ups of the cosmonaut, it is concluded that the space helmet has protective goggles that slide into the upper part of the helmet when they are not in use. The magazine article makes misleading statements pertinent to the density of the face mask.

d. On some frames exposed in Camera Number 1, clouds, the inside edge of the porthole, and a very clear stellar field are imaged simultaneously. There is no indication of movement on the edge of the porthole (nearest the lens) indicating a relatively fast shutter speed. The cloud formations display some detail, also indicating a relatively short exposure (not overexposed); however, the stellar images are very bright indicating a long exposure. Furthermore, the stars are very distinctive and do not display image smear. To our knowledge, the only way a photograph with these characteristics could be produced would be by using a slow shutter speed and panning the stellar field in synchronization with the movement of the space vehicle. If this were the case, however, the edges of the porthole would surely show the effects of movement. Furthermore, from our experiences with the stellar

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Photo
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cameras used in our "G" and "J" programs, we know that the brightness ratio between the earth and the stellar field is extreme. When the exposure is adjusted for the stellar field, the light reflected from the earth is such that it completely floods the format with exposure if any portion of it is imaged within the frame. With both of our satellite reconnaissance systems stellar cameras we use an exposure of 2 seconds at $f/1.8$ on film type 4401 (a fast emulsion).

5. Because this entire analysis seems to have been inspired by the article written by Mr. Lloyd Mallan and printed in the January issue of Science and Mechanics magazine, each point made by Mr. Mallan was considered. Following is a list of each point together with pertinent NPIC comments:

a. Mr. Mallan: "It is not a true color film but a doctored black and white film."

NPIC COMMENT: Two of the six cameras used were loaded with color film. The fact that the entire presentation was printed on color film does not indicate an attempt to deceive.

b. Mr. Mallan: The film was double printed.

NPIC COMMENT: The great depth of field, apparent on the photography of the cosmonaut in space, is suspicious. Some scenes show the cosmonaut very near the lens in sharp focus, and the earth in the background also in sharp focus. In other scenes the cosmonaut drifts away from the lens and the imagery of him is less sharp while the imagery of the earth remains in focus. While this phenomena could be explained by assuming the use of a double printing technique, the reason for not having all images in sharp focus is not apparent. Assuming the film is a hoax and the cosmonaut was suspended from wires, it would be easier to obscure the wire images by appropriate lighting than by de-focusing.

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*Photo
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c. Mr. Mallan: Leonov was suspended from wires or strings.

NPIC COMMENT: Analysts at NPIC could detect no definite images of wires. Mr. Mallan presented photographs in his article showing a protrusion of the astronaut's suit in line with a wire-like image. Since the film contains many scratches and abrasions, wire-like images can be found in nearly any position. The protrusion of the spacesuit, where Mr. Mallan contends the wire was attached, is actually the flap on a leg pocket of the spacesuit. There is little ground for agreement or disagreement on the point.

22, 23

d. Mr. Mallan: The entire body of the cosmonaut is never completely shown in one photograph.

22, 23

NPIC COMMENT: It is a suspicious aspect but it proves nothing.

e. Mr. Mallan: The camera angle showing Leonov crawling from the hatch is impossible.

27, 29,

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NPIC COMMENT: NPIC analysts are satisfied that the cosmonaut's egress and ingress are the same sequence of photographs reversed to simulate opposite action. While the orientation of the imagery within the frames indicates that the egress was the faked portion, it cannot be definitely ascertained.

f. Mr. Mallan: None of the film presented on television was duplicated on the film.

NPIC COMMENT: The TV film was not available at NPIC and only one of the analysts remembered having seen it. He recalled scenes from the TV version not duplicated on the film. However, the NPIC analysts could make no definite statements pertinent to Mr. Mallan's assertion.

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g. Mr. Mallan: One still photo presented on TV shows the cosmonaut emerging from the hatch standing straight up with his body still half way inside the space capsule.

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NPIC COMMENT: Since the still photos were not available to the NPIC analysts, they could make no pertinent conclusions. However, if Mr. Mallan's statement is true, the method of egress or ingress is in sharp contrast to that displayed on the film available at NPIC.

h. Mr. Mallan: The black and white stills were photographed in water to simulate floating or lack of gravity.

22, 23

NPIC COMMENT: The black and white stills, referred to in Mr. Mallan's article, were not available for analysis at NPIC. The NPIC analysts considered the possibility of that technique while viewing the film of the walk in space. There is no evidence that the scenes were created in an underwater environment.

i. Mr. Mallan: The faceplate on Leonov's space helmet was clear. His face was visible through it.

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NPIC COMMENT: Mr. Mallan is suggesting that an eye shield would be necessary to protect the cosmonaut's eyes from radiation. NPIC analysts observed that the face of the cosmonaut is completely in view, under his face mask, while in the capsule; however, only his nose and mouth are visible while he is outside the vehicle. The design of the Russian helmet is very similar to that used by the American astronauts in the Gemini program. In the helmet used by the American astronauts, there are retractable goggles within the shield. Presumably, the Russian helmet is similar in that respect.

j. Mr. Mallan: Patterns of reflected light on the Russian's face plate and on the American face plate are remarkably different.

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NPIC COMMENT: True, there is a difference in the reflectance characteristics on the face masks. However, more information about the composition of the face plate material would be necessary in order to realize the significance of the differences. Reflected images of the capsule hatch were noted in the face plate of the Russian mask, indicating a capsule was used during the filming (whether in space or on earth).

*16, 27,
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54-56*

k. Mr. Mallan: Astronaut White could not keep his legs together in zero gravity. The cosmonaut's legs were always close together.

22, 23

NPIC COMMENT: The cosmonaut's legs were always close together. However, in the opinion of the NPIC analysts, there is no apparent reason why a man in space could not maneuver his limbs at will.

l. Mr. Mallan: MORAD was said to have seen the electronic signature of the Russian stepping out of the spaceship. The report was false.

None

NPIC COMMENT: The information could not be verified or refuted.

6. Summary and Conclusions

a. The analysts at NPIC are sure the film showing the astronaut's exit from and re-entry to the capsule is partially faked. There is little doubt that the Russians would realize the hoax would be detected. The purpose of the transposed, duplicated imagery probably was to produce a movie with more continuity than would otherwise be possible.

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b. The variation in distances that are in or out of focus is a suspicious factor. Time limitations imposed on the NPIC analysts, negated the possibility of their making further conclusions pertinent to the subject.

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c. Probably the most outstanding question in the minds of the NPIC analysts is the exposure used by the Russians, enabling them to acquire good quality imagery of the porthole, stars and cloud formations all at once. Here again the time allowed was not sufficient to make a detailed study.

17, 18, 57

d. Assuming the Russian movie techniques are similar to those of the United States, they could have produced a film under simulated conditions without the apparent discrepancies noted here. Allowed more time, the analysts could make more definite conclusions about the probability of the film footage that was faked compared to that which may be legitimate.

None

e. Fifty-eight polaroid prints and four transparencies were generated during the study. That photography, together with all of the observations leading to the conclusions reported here, are available in the Technical Intelligence Division/Technical Services Branch at the NPIC.

None

Chief, Technical Intelligence Division**Distribution:**cys 1 & 2 - Addressee **WARNING**

3 - Ch/TID

4 - Ch/TSB

5 - Ch/TSB

- chrono

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INDEX OF PHOTOGRAPHY

- Photo 1 First frame on the roll.
Earth and ground through porthole.
Camera #1; Index 27908 2/16
- Photo 2 Third frame on the roll and last in a series of
three.
Camera #1; Index 27908 4/16
SPLICE
Splice and approximately 15 feet of unexposed film.
SPLICE
- Photo 3 Continuation of the previous series.
Camera #1; Index 27929 11/16
- Photo 4 Last frame of series.
Camera #1; Index 27958 5/16
SPLICE
- Photo 5 Beginning of sequence showing cosmonaut in vehicle.
Camera #2; Index 27958 6/16
- Photo 6 Last photo prior to a splice.
Camera #2; Index 27958 7/16
SPLICE
- Photo 7 First photo following a splice. There is no indication
of a change in imagery. Seems to be a continuation
of the previous sequence with no apparent reason for
the splice.
Camera #2; Index 27965 4/16
- Photo 8 Last frame of sequence.
Camera #2; Index 27991 11/16
SPLICE
- Photo 9 First frame of sequence showing close-up of the cosmonaut.
Camera #2; Index 27991 12/16
- Photo 10 Last frame of sequence.
Camera #2; Index 28015 11/16

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- Photo 11 First frame of sequence showing moderate close-up of cosmonaut in the capsule.
Camera #2; Index 28015 12/16
- Photo 12 Last frame of sequence.
Camera #2; Index 28050 15/16
SPLICE
- Photo 13 First in a sequence of the sky and earth photographed through a porthole. Reflections on the photo are apparently from the porthole glass.
Camera #1; Index 28051
- Photo 14 Last frame of the sequence.
Camera #1; Index 28084 9/16
SPLICE
- Photo 15 First frame of sequence pretending to show the cosmonaut's egress from the capsule. Note that these are the only photos of the roll that are oriented upside down. Compare with the frames showing the cosmonaut re-entering the capsule.
Camera #3; Index 28064 9/16
- Photo 16 Last frame of sequence.
Camera #3; Index 28084 8/16
SPLICE
- Photo 17 First in sequence showing the stellar field, earth, and inside edge of porthole. Note the relative exposure between the three types of images. The sky is blue on the copy.
Camera #1; Index 28084 9/16
- Photo 18 Frame within the sequence showing more earth (cloud covered) imagery.
Camera #1; Index 28091
- Photo 19 Last frame of the sequence. There is little or no detail. Photo 19 is a good copy.
Camera #1; Index 28113 9/16
SPLICE

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- Photo 20 First frame in sequence showing cosmonaut leaving capsule. Photography from the inside looking out. Camera #4; Index 28113 10/16
- Photo 21 Last frame of the sequence. Camera #4; Index 28124 8/16
SPLICE
- Photo 22 First frame of sequence showing the cosmonaut outside the capsule. Note that he is not in sharp focus. Camera #5; Index 28124 9/16
- Photo 23 Note the detail (sharp-focus) on the cosmonaut's suit while he is very near the lens. Clouds in the background are also in sharp focus. Camera #5; Index 28188
- Photo 24 Last frame of the sequence. Camera #5; Index 28535 7/16
SPLICE
- Photo 25 First frame of sequence showing the cosmonaut re-entering the capsule. Photo taken from the inside looking out. Camera #6; Index 28535 8/16
- Photo 26 Last frame of sequence. Camera #6; Index 28550 12/16
SPLICE
- Photo 27 First frame of sequence showing cosmonaut re-entering the capsule. Photographed from the outside looking in. Camera #3; Index 28550 13/16
- Photo 28 Note the feather-like images. Camera #3; Index 28552 2/16
- Photo 29 Last frame of sequence. Camera #3; Index 28573 1/16
SPLICE
- Photo 30 First frame in sequence of terrain images. Camera #1; Index 28573 2/16

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- Photo 31 Last frame of sequence.
Camera #1; Index 28590 11/16
SPLICE
- Photo 32 First of a series of close-ups of the cosmonaut in the
vehicle. Note the TV type scan lines.
Camera #2; Index 28590 12/16
- Photo 33 Last frame of sequence.
Camera #2; Index 28616 9/16
SPLICE
- Photo 34 First frame in a sequence of medium close-ups of the
cosmonaut inside the capsule. This is apparently
the same camera used in the preceding sequence, but
with a shorter focal length lens.
Camera #2; Index 28616 10/16
- Photo 35 Last frame of sequence.
Camera #2; Index 28698 15/16
SPLICE
- Photo 36 First in a sequence of earth and sky photos. No
stellar images.
Camera #1; Index 28699
- Photo 37 Last frame of the sequence.
Camera #1; Index 28721 14/16
SPLICE
- Photo 38 First in a series of photos of the hatch. While this
is the same camera used in the preceding series, the
format is much cleaner.
Camera #1; Index 28721 15/16
- Photo 39 Last frame of sequence.
Camera #1; Index 28737
SPLICE
- Photo 40 First in a series of photos showing the cosmonaut inside
the vehicle. Note the distinct snow pattern character-
istic of electronically recorded images.
Camera #6; Index 28737 1/16

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Photo 41 Last frame of sequence.
Camera #6; Index 28754 3/16
SPLICE

Photo 42 First in a series apparently exposed out the window.
Camera #1; Index 28754 4/16

Photo 43 Last frame of sequence. Note the octagonal reflection -
apparently reflection from glass.
Camera #1; Index 28766 13/16
SPLICE

Photo 44 First in a series showing the cosmonaut inside the
capsule.
Camera #6; Index 28766 14/16

Photo 45 Last frame of sequence.
Camera #6; Index 28774 4/16
SPLICE

Photo 46 First in a series of sky and earth photos. The color
is very good in this sequence. No stars.
Camera #1; Index 28774 5/16

Photo 47 Last frame of sequence.
Camera #1; Index 28802 3/16

Photo 48 First in a series showing the terrain. Note the apparent
change in focal length since the last time this camera
was used.
Camera #1; Index 28802 4/16

Photo 49 Last frame of sequence.
Camera #1; Index 288031 6/16
SPLICE

Photo 50 First in a series of sky and terrain photos.
Camera #1; Index 28831 7/16

Photo 51 Last frame on the roll.
Camera #1; Index 28836 3/16

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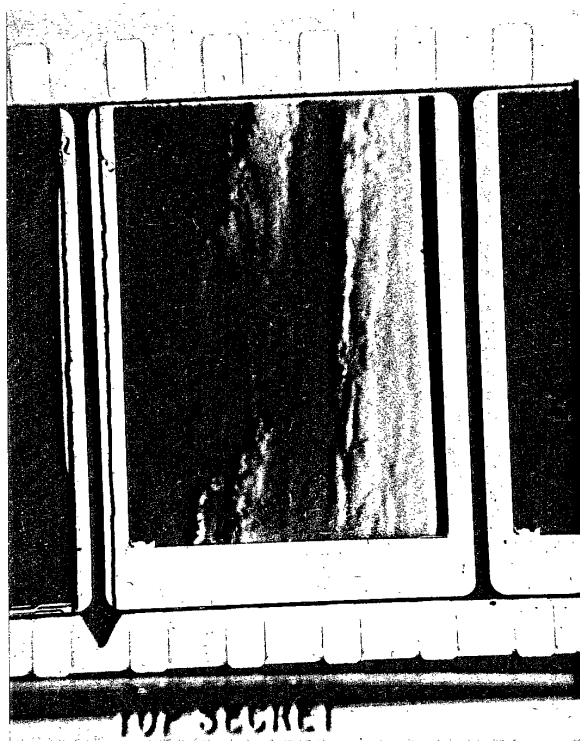
- Photo 52 Image of fog induced by static discharge. It is impossible to determine on which copy the anomaly was induced.
Camera #2; Index 28634
- Photo 53 Example of intercepted Russian electronic transmission from space.
- Photo 54 Cosmonaut exiting from capsule. Compare with Photo 28 showing cosmonaut re-entering capsule.
Camera #3; Index 28083 2/16
- Photo 55 Cosmonaut exiting from capsule. Compare with Photo 28 showing cosmonaut re-entering capsule.
Camera #3; Index 28083 3/16
- Photo 56 Darker version of preceding photo.
Camera #3; Index 28083 3/16
- Photo 57 Print showing distinct stellar imagery.
Camera #1; Index 28087 3/16
- Photo 58 Print showing the feather-like images. Exposed from inside the capsule.
Camera #6; Index 28543 10/16
- Photo 59 Color positive transparency made from a black and white film positive.

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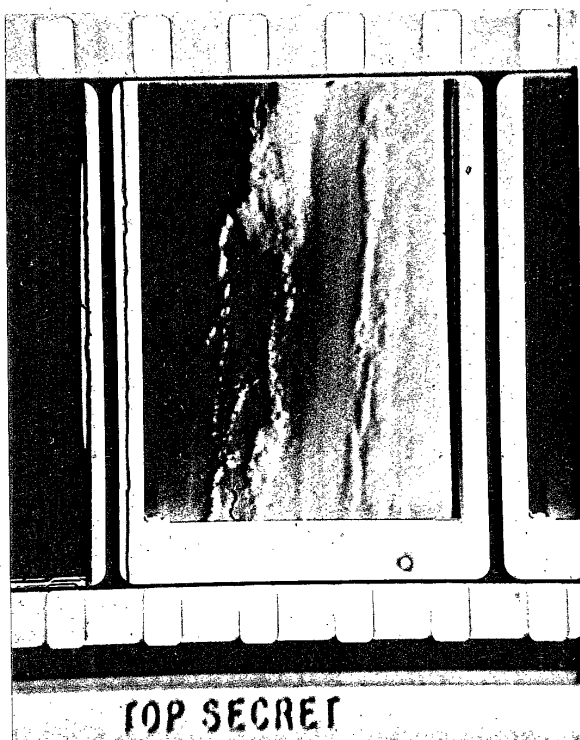
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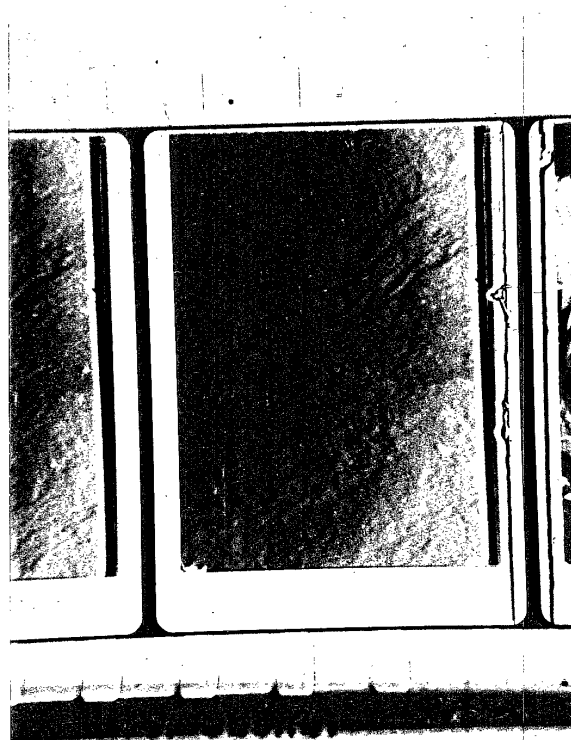
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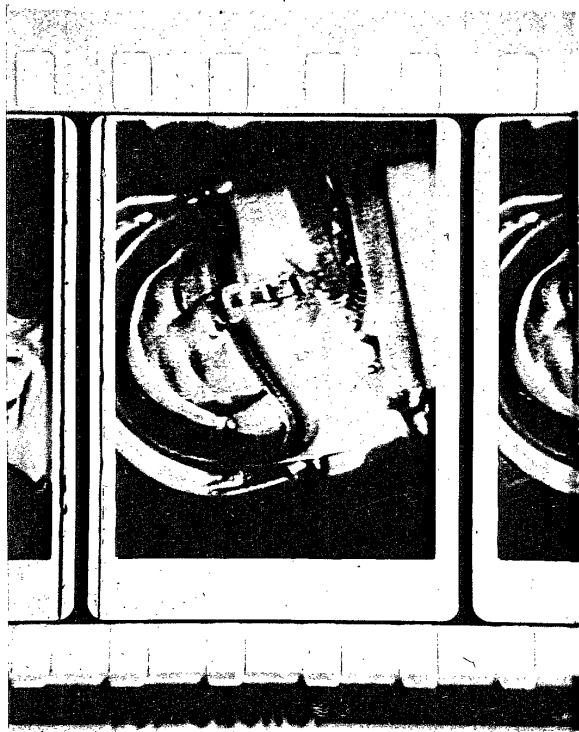
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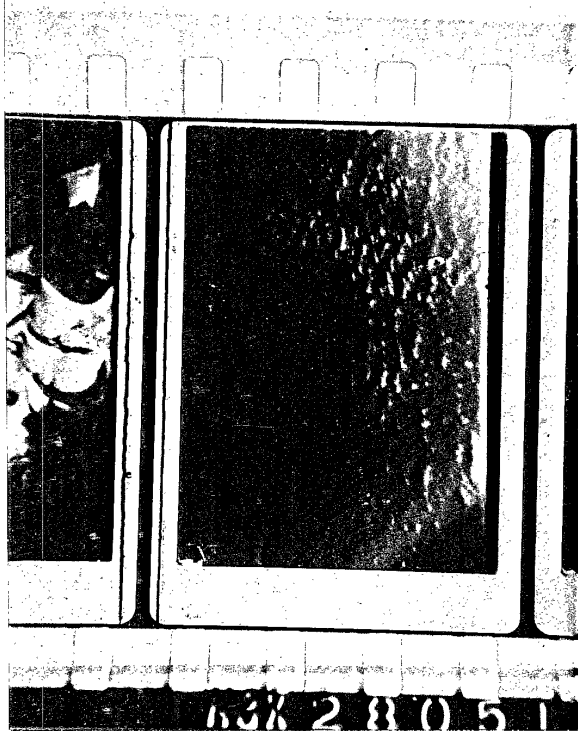


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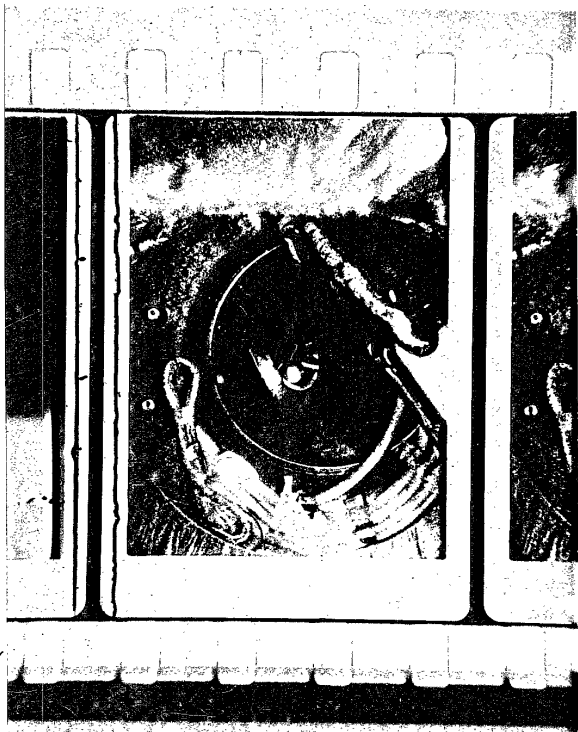


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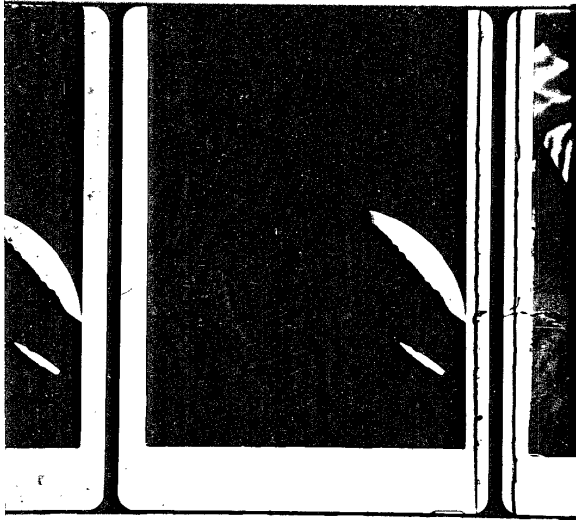
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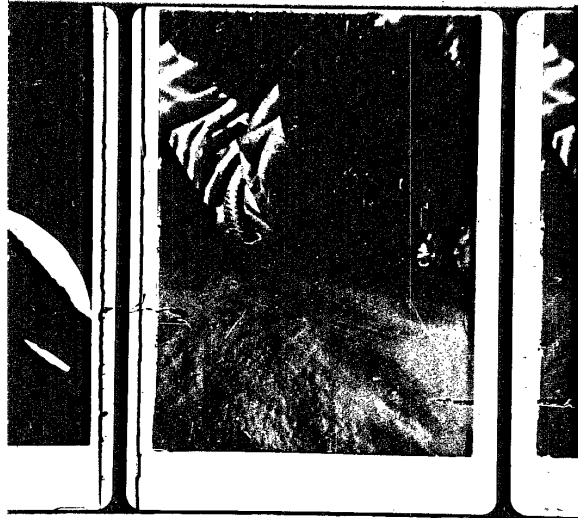


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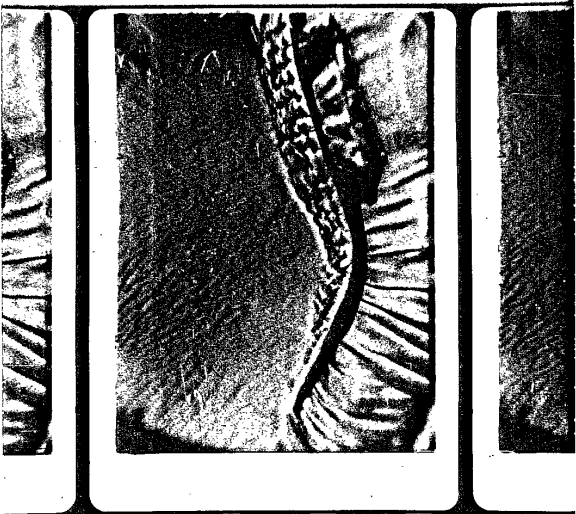
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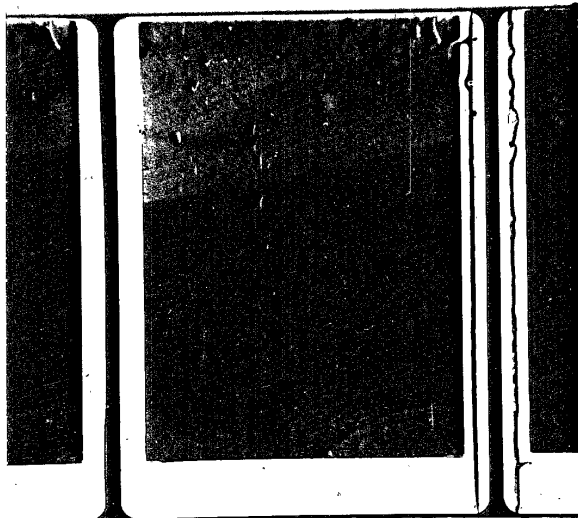
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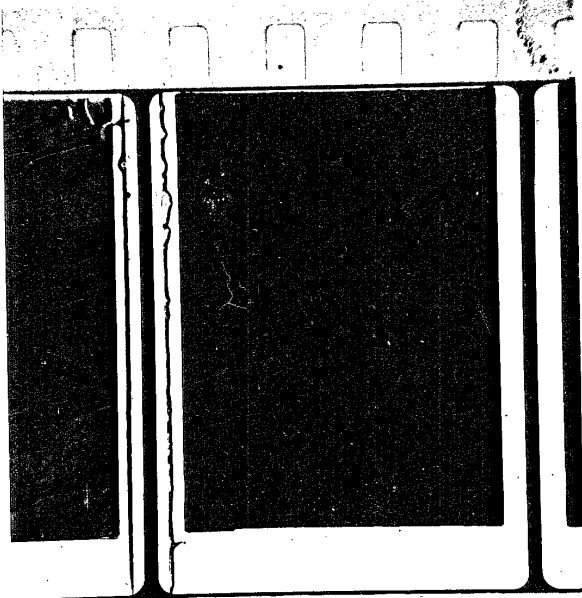


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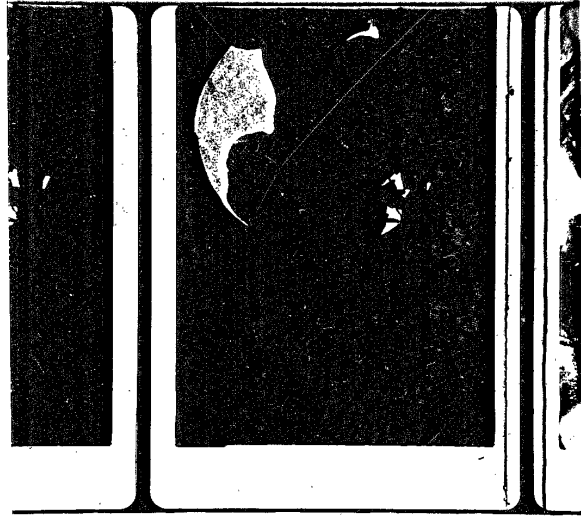
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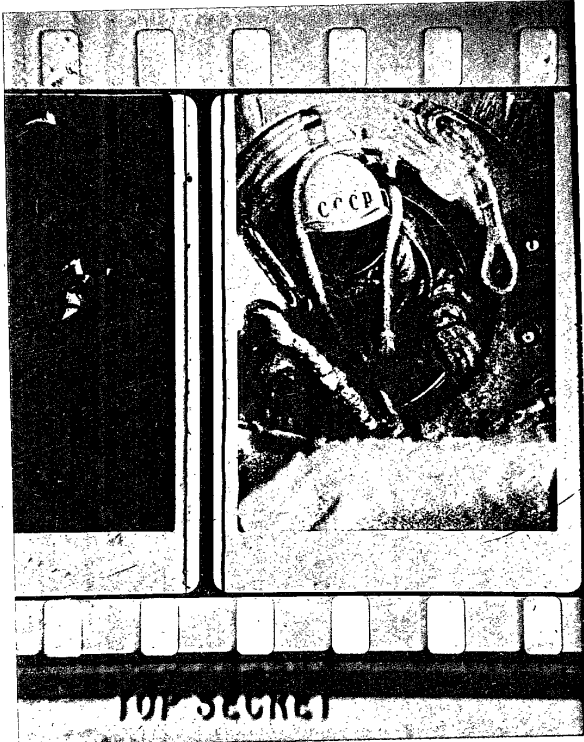
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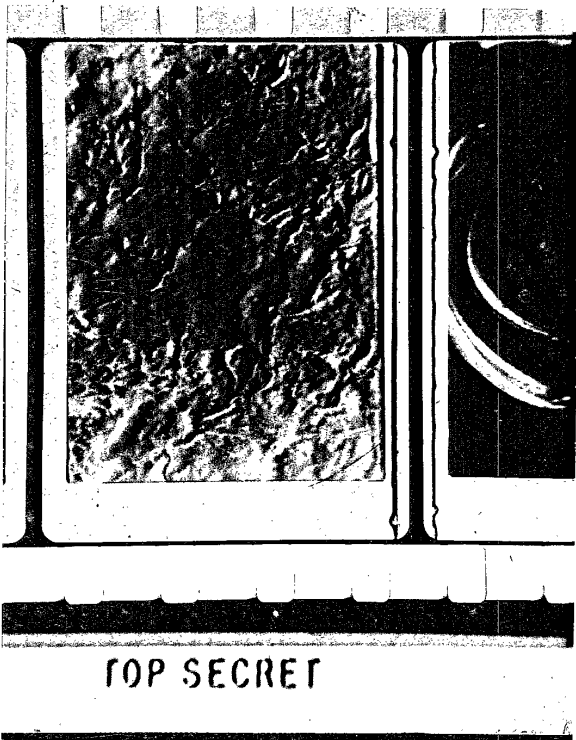
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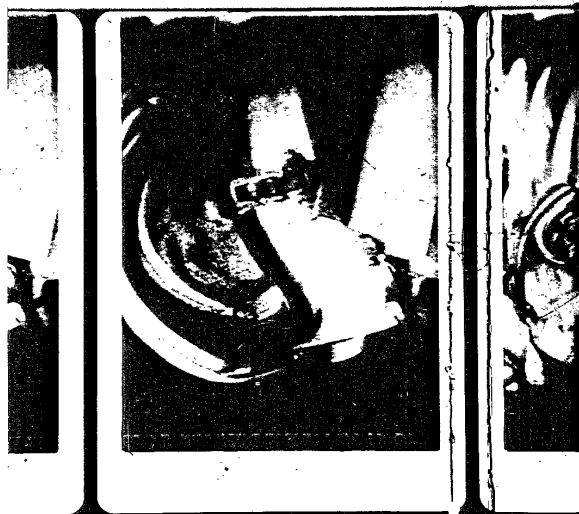


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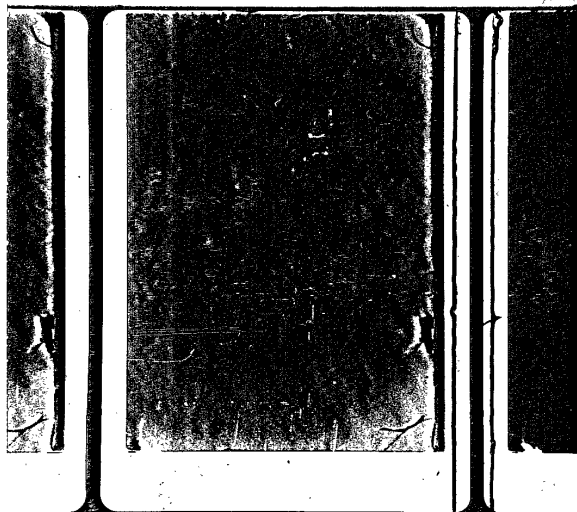
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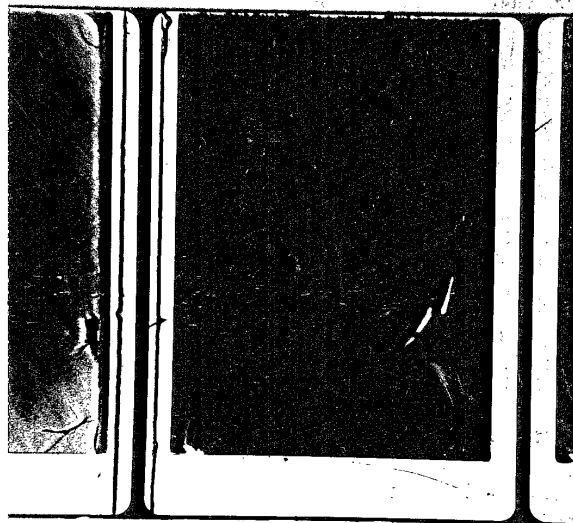
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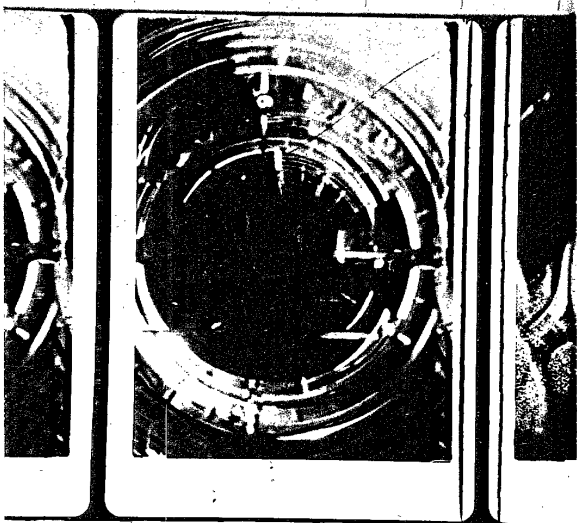
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39



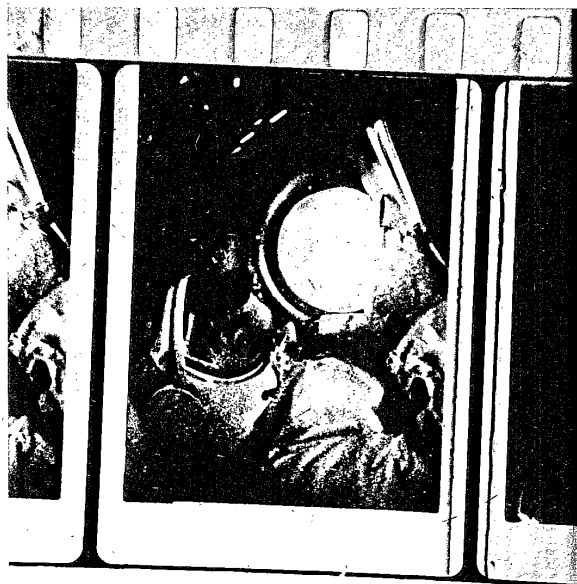
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7 3 7
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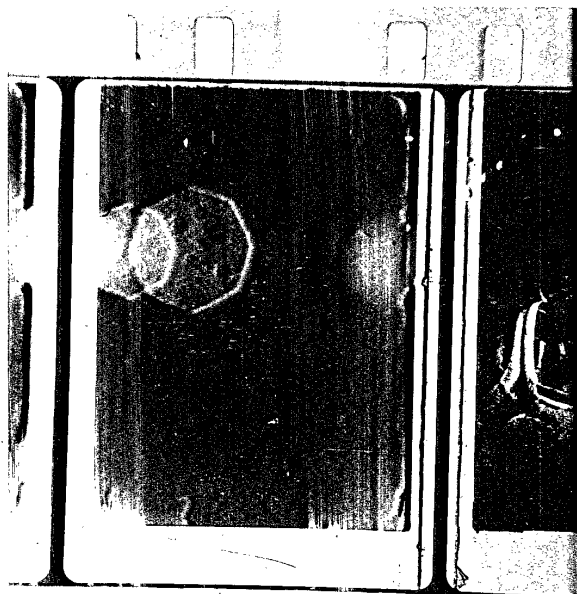
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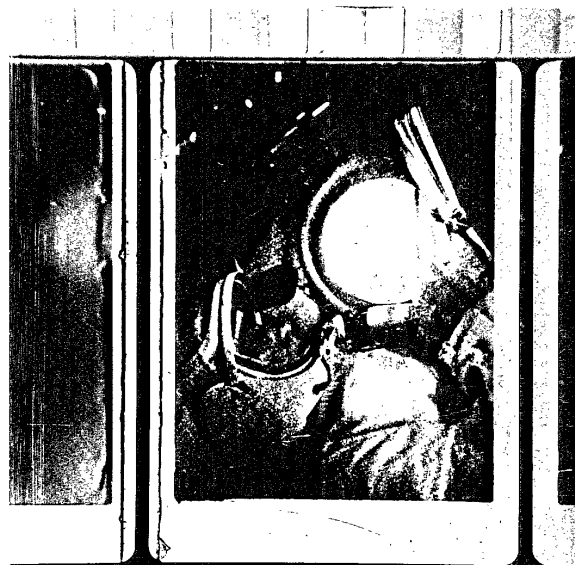
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TOP SECRET

44



TOP SECRET

45



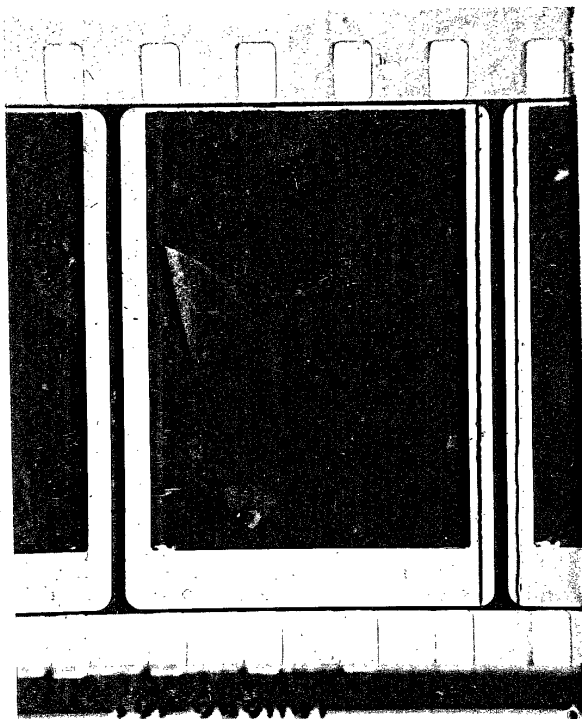
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TOP SECRET

47



TOP SECRET

48



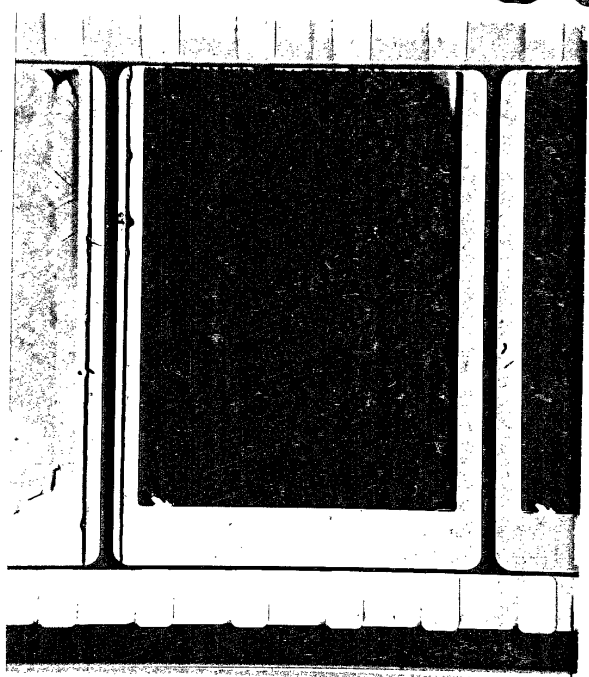
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50



TOP SECRET



TOP SECRET

51

52

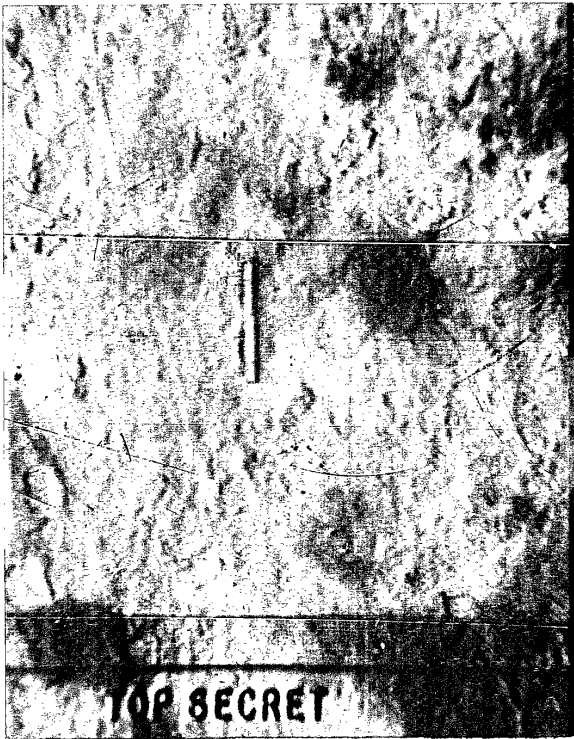


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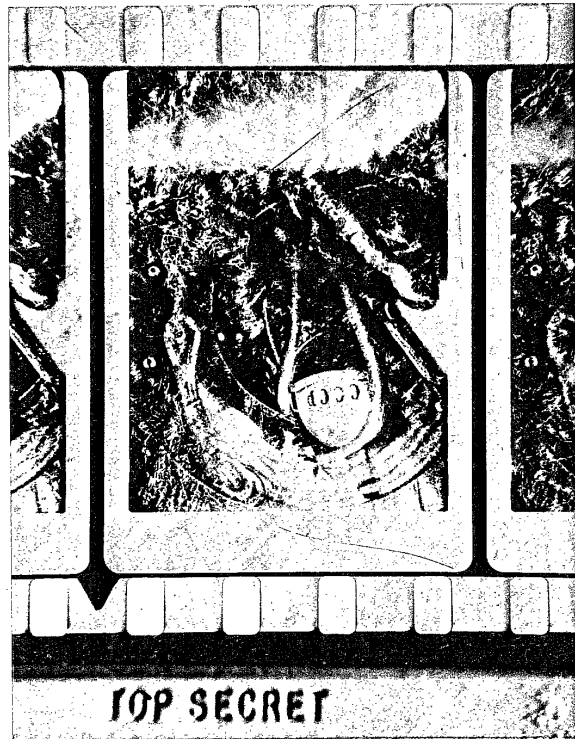


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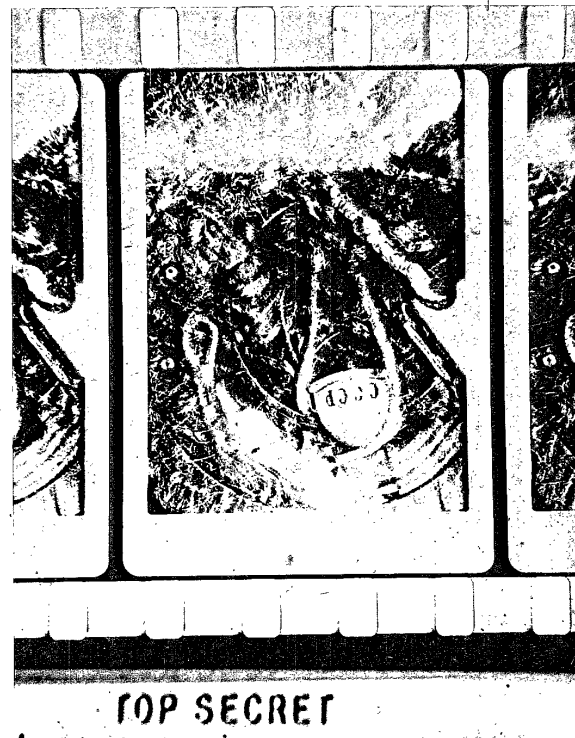
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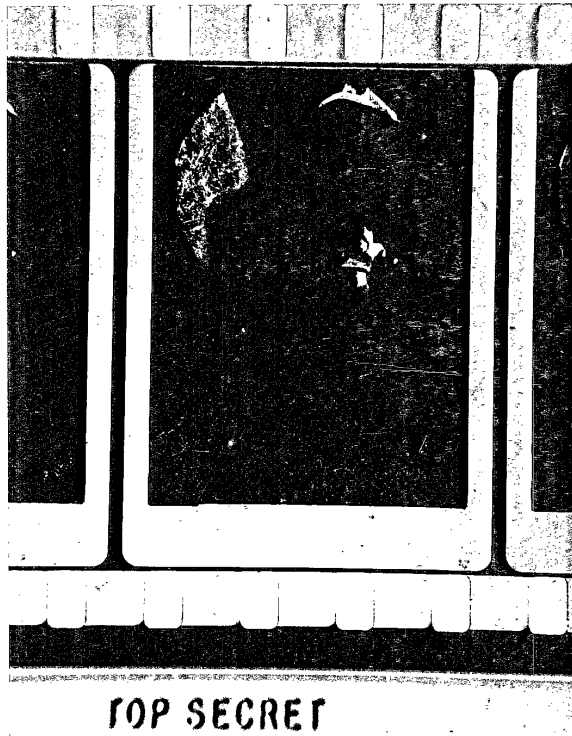
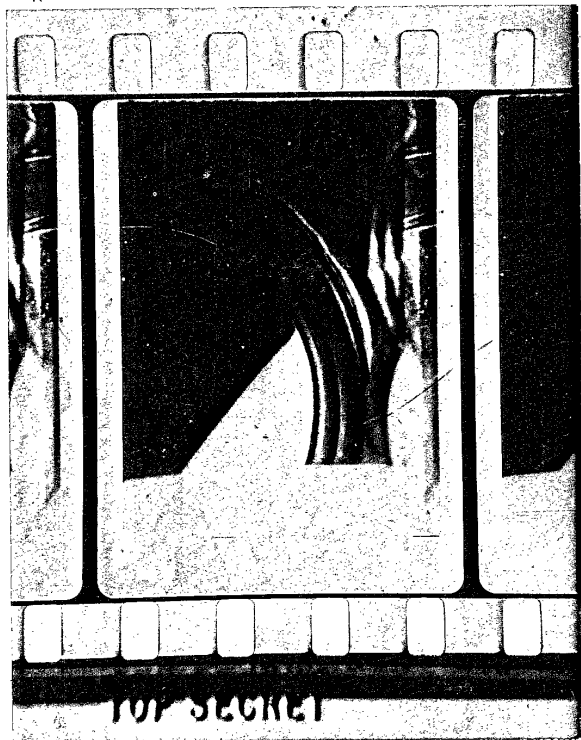


56



5.7

5.8



59



TOP SECRET**WORKING PAPER**

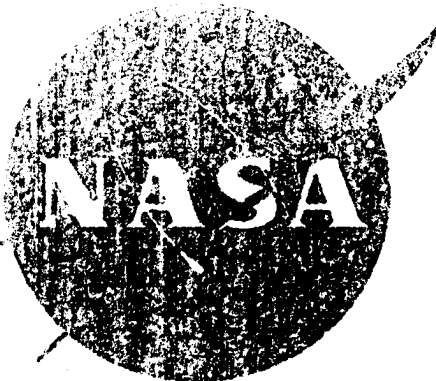
25X1

*Briefing Area**Face Shield!**Photo 9: Casanova's face in full view.**Photo 40: Probable shield.**Photos 27 & 28: Casanova's egress.**Photos 54-56: Casanova's ingress.**Scan Lines!**Photo 9, 10: Assumed TV presence before.**Photo 53: Intercepted TV transmission.**Exposure!**Photo 17: Clouds, stars, and pool of light
off in good exposure.**Camera #1**" 2**" 3**" 4**" 5**" 6**Color**Electronic**"**"**Color**Electronic**Examples**1-4**5-12**13-16**20-21**22-24**25-26*

25X1

WORKING PAPER**TOP SECRET**





NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
400 MARYLAND AVENUE, S.W. WASHINGTON, D.C. 20546

FOR RELEASE: June 3, 1965

PHOTO NO.: 65-H-1019

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GT-4 EVA - Astronaut Edward H. White II is shown performing his spectacular space feat during the third orbit of the Gemini-Titan 4 flight. White floats into space, secured to the Gemini 4 spacecraft by a 25-ft. umbilical line and a 23-ft. tether line, both wrapped together with gold tape to form one cord. White became the first American Astronaut to egress his spacecraft while in orbit. He remained outside the spacecraft for a total of 21 minutes. White wears a specially designed space suit for his extravehicular activity. He wears an emergency oxygen supply chest pack. He is holding a Hand-Held Self-Maneuvering Unit which he used to move about in the weightless environment. White and the GT-4 command pilot, Astronaut James A. McDivitt, performed other scientific and engineering experiments before completing their 62-revolution mission and returning safely to Earth.

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